Part I: Mitigation Goals and Objectives

The Freelandville Complex is a surface coal mine (owned and operated by Triad Mining, Inc.) Coal mining regulations require the mine disturbed areas to be regraded and reclaimed to drain surface runoff properly while not impeding surface runoff from upstream areas. The mine operator, has extensive mining and reclamation experience and will reclaim all mine affected areas to: meet mine grading regulations, replace soil materials, restore adequate drainage, return reclaimed areas to productive land uses (for continued use by landowners) and restore wildlife habitat to approximate original values.

The stream habitat values for pre- and the post-disturbance streams are based on the EPA RBP stream scoring methodology. The average EPA RBP score of all post-mine streams will be equal to or greater than the average pre-mine RBP score. The pre-mine average RBP score for ephemeral streams was 64. The pre-mine RBP score for intermittent streams was 103. Triad's average goal RBP scores for post-mine ephemeral and intermittent streams are 70 and 110 respectively. See the "Freelandville Complex – Mitigation Summary" spreadsheet for individual goal RBP scores.

The majority of the disturbed post-mine site will have an upland landscape setting similar to pre-disturbance conditions. The mined area will have restored ephemeral streams and intermittent channels that will drain to existing streams and lakes around the fringe of the mine permit area. The stream restoration plan will place wood debris and local durable non-toxic, non-acidic rock in restored floodplains and channels whenever possible.

Post-mine streams will continue to function as conduits for surface water runoff from the upland areas to lower streams. The restored streams will also function to provide short term aquatic habitat and to transport water, sediment, wood and leaf detritus materials to larger streams.

In addition to streams, forested wetlands will also be established as part of the A.T.F. Mitigation Plan. The wetland areas will provide excellent habitat for numerous animals and aquatic life. They will also reduce soil erosion, filter pollutants and improve overall water quality at the site.

Pre-disturbance Freelandville Complex streams (functions and habitat values) are tabulated in the attached "Freelandville Complex – Stream Assessments" as well as the "Freelandville Complex – Impacts Report."

Part II: Baseline Information for Impact and Proposed Mitigation Sites

The Freelandville Complex is composed of mostly upland areas used for farming and agricultural purposes. Upland areas are drained via small ephemeral stream channels in a natural channel or channelized drainage pattern. Lower streams are intermittent streams flowing to relatively permanent waters such as Pollard Ditch and Maria Creek thence to local rivers.

Most streams within the site have been channelized and lack significant accumulations of roots, wood and leaf debris. See attached "Freelandville Complex – Stream Assessments" for images of streams as well as EPA RBP Scores and Rosgen assessment data.

Local streams function as conduits for surface water runoff from the upland areas to lower streams. Local intermittent streams provide a permanent aquatic habitat in lower reaches where stream flow is long term. Lack of riparian canopy shading along many intermittent streams significantly reduces the level of aquatic habitat. The headwater ephemeral streams function to provide short term aquatic habitat and to transport water, sediment, wood and leaf detritus materials to larger streams.

Part II: Baseline Information for Impact and Proposed Mitigation Sites

Land Use Information (From Approved SMCRA Permit)

Land Use (LU)	Permitted Surface Pre-mine Acreage	Pre-mine Percentage	Permitted Surface Post-mine Acreage	Post-mine Percentage
Cropland	3422.1	76.96 %	3506.8	78.86 %
Pasture & Hayland	384.5	8.65 %	294.9	6.63 %
Forest	277.9	6.25 %	262.0	5.89 %
Water	40.9	0.92 %	85.5	1.92 %
Residential	90.4	2.03 %	73.5	1.65 %
Wildlife	50.5	1.14 %	182.1	4.10 %
Permanent Road	36.9	0.83 %	35.9	0.81 %
Commercial	8.0	0.18 %	6.1	0.14 %
Previously Disturbed By Mining	135.6	3.05 %	0.0	0.00 %
Total Surface Mine Permit	4446.8 acres		4446.8 acres	

* Areas adjacent to the mine permitted areas have land uses in similar percentages to the above pre-mine land uses.

From "Hydrology of Area 32" (Published 1981) Knox & Sullivan Counties had the following land uses:

Knox County		Sullivan County
80.7 %	Agriculture Use	83.8 %
11.5 %	Forested Use	10.0 %
4.8 %	Urban Use	1.5 %
0.6 %	Water Use	0.1 %
2.3 %	Other Use	0.0 %
0.1 %	Mined	3.6 %

Part II: Baseline Information for Impact and Proposed Mitigation Sites

Soils Information

Knox County Soils (Published Data)

Mine Permit #S-311 Soil Series	"A" Horizon Thickness	Soil Capability	Classified as "Hydric" Soil
AlB2- Alford	6"	IIe	No
AlC2- Alford	6"	IIIe	No
AlD3- Alford	6"	Vle	No
Bd - Birds	7"	IIIw	YES
Ha- Haymond	10"	IIIw	No
HkF- Hickory	5"	Vle	No
HoA- Hosmer	6"	lls	No
HoB2- Hosmer	6"	lle	No
HoC3- Hosmer	6"	Ive	No
HoD3- Hosmer	6"	Vle	No
IvA- Iva	12"	llw	No
Kn- Kings	14"	IIIw	YES
Wa- Wakeland	7"	lllw	YES
Zp - Zipp	5"	Illw	YES

Mine Permit #S-351 Soil Series	"A" Horizon Thickness	Soil Capability	Classified as "Hydric" Soil
HeA - Henshaw	10"	llw	No
HoA - Hosmer	15"	lls	No
HoB2 - Hosmer	06"	lle	No
IoA - Iona	10"	I	No
IvA - Iva	12"	llw	No
Kn - Kings	14"	IIIw	YES
Pb - Patton	17"	llw	YES
Ra - Ragsdale	18"	llw	YES
ReA - Reesville	13"	llw	No
Sa - Selma	15"	llw	YES
Sc - Selma	16"	llw	YES
SyB2 - Sylvan	07"	lle	No
SyC3 - Sylvan	06"	IVe	No
SyF - Sylvan	07"	Vle	No
Wa - Wakeland	07"	lllw	YES
Zp - Zipp	05"	lllw	YES
Du - Dumps, Mine	00"		No

Part II: Baseline Information for Impact and Proposed Mitigation Sites

Soils Information (Continued)

Mine Permit #S-358 Soil Series	"A" Horizon Thickness	Soil Capability	Classified as "Hydric" Soil
AlB2 - Alford	06"	IIe	No
AlC2 - Alford	06"	IIe	No
AlD3 - Alford	04"	VIe	No
Bd - Birds	07"	IIIw	YES
FaB - Fairpoint	01"	VIs	No
FbG - Fairpoint	02"	VIIe	No
HeA - Henshaw	10"	IIw	No
HoA - Hosmer	15"	lls	No
HoB2 - Hosmer	06"	lle	No
HoC3 - Hosmer	06"	IVe	No
IvA - Iva	12"	llw	No
Pb - Patton	17"	IIw	YES
Ra - Ragsdale	18"	llw	YES
ReA - Reesville	13"	IIw	No
Wa - Wakeland	07"	llw	YES

"NOTE" - FaB and FbG are mined disturbed soils. FaB is graded pre-SMCRA mine spoil; FbG is direct cast overburden from surface coal mining activities.

* Data from Soil Survey of Knox County, Indiana, 1981 & 1993 IN Soil Yield Update

Sullivan County Soils (Published Data)

Mine Permit #S-311 Soil Series		Soil Capability	Classified as "Hydric" Soil
AlA	- Ava	2W	No
AfB2	- Alford	2e	No
AfB3	- Alford	3e	No
AfC2	- Alford	3e	No
AfC3	- Alford	4e	No
AfD3	- Alford	6e	No
CnC3	- Cincinnati	4e	No
CnD2	- Cincinnati	4e	No
CnD3	- Cincinnati	6e	No
Cu	- Cuba	2w	No
HkF	- Hickory	7e	No
MuB2	- Muren	2e	No
Ww	- Wilbur	2w	No

* Data from Soil Survey of Sullivan County, Indiana, 2005 CD Version.

Part III: Mitigation Site Selection and Justification

The A.T.F Mitigation Plan requires that Triad restore 28,456 feet of ephemeral stream and 14,602 feet of intermittent stream. Where possible, these streams will be re-constructed in their approximate original location. The EPA has requested that Triad establish 50 ft wide (25ft on each side) buffer zones for restored ephemeral streams and 100 ft wide (50 ft on each side) buffer zones for intermittent streams.

Triad owns only a small portion of the property that makes up the Freelandville Complex, the majority of the area is owned by individual landowners (typically farmers). Most of these landowners object to the addition of stream buffer zones on their property. As a result, forested buffer zones will only be planted on Triad owned properties and/or on privately owned property with landowner permission. With landowner permission, forested buffer zones will have a much greater chance of success. Landowners who object to forested buffers will be much more likely to mow down trees. Forested buffer zones can be increased to 100 ft wide (50ft on each side) for ephemeral streams and 200 ft wide (100 on each side) for intermittent streams for an additional 10% mitigation credit.

Mitigation streams and forested buffer zones are both shown on the attached Mitigation Maps as well as the "Restored Stream Summary."

A total of 10 acres of forested wetland will constructed in within the Freelandville Complex. The wetland areas will be considered out-of-kind mitigation, and will count toward the required stream restoration.

Mitigation streams and wetlands will be constructed at two different sites. The majority will be located within or adjacent to the Freelandville Complex and a portion of the mitigation will be located at Triad's Log Creek Complex, in Pike County Indiana. The attached A.T.F Mitigation Plan Maps show the proposed mitigation work to be constructed at each site.

The operator will provide the Division of Reclamation with a copy of the USACE stream assessment and proposed restoration plan. The restoration of the post-mine using a "natural stream design" with the addition of native rock and wood debris in the floodplain to allow a meandering base flow channel to develop is not in conflict with the SMCRA mining and reclamation requirements.

Problems with stability of restored stream bed and banks can be corrected by additional placement of native rock, rip-rap, wood debris and/or other erosion control measures to problem areas. Any potential problems will be evident in the annual report submitted to the USACE field office. The monitoring period will provide ample time to rectify any failures. All mitigation streams will be monitored for a minimum of 5 years with long-term protection, or a minimum of 7 years if long-term protection is not provided. Mitigation wetlands will be monitored for a minimum of 7 years. The monitoring period may be extended if performance standards are not met.

Part III: Mitigation Site Selection and Justification

Triad has chosen mitigation sites based on several parameters. Soil types, natural drainage patterns, land uses, topography, local climate and Triad's ability to obtain deed restrictions from the landowner have all been taken into consideration. All restored streams and wetlands will be constructed in such a manner as to insure the post-mine aquatic system is restored to a level similar to pre-mine conditions and compatible with un-disturbed adjacent watersheds.

All coal mines have operated since 1978 under the stringent regulations that require restoration of the land surface and soils that allow the mine affected areas to be returned to a productive state. Experience gained in the past 25 years has led to reclamation and maintenance practices that minimize the adverse affects due to flooding, drought, and invasive species. These practices include: thick lift soil placement with end dump trucks (to minimize soil compaction), ripping of compacted areas with bulldozers and/or large farm tractors, deep burial of acidic overburden, deep burial of coal processing waste and timely reclamation of regraded areas.

Triad Mining, Inc. employs a permanent staff familiar with:

- the surface coal mine permit,
- USACE Section 404 permit/authorization,
- coal mining operations,
- surveying activities for mine operation,
- grading and reclamation operations,
- land revegetation restoration of productivity.

Triad Mining, Inc., has received reclamation awards at reclaimed surface coal mines. Triad Mining, Inc., has a crew dedicated to mine reclamation and technical staff employees to implement the proposed stream mitigation.

Triad Mining has a plan to have technical staff and/or field reclamation employees attend training classes by recognized stream restoration professionals. Triad also hires qualified consultants to provide advice on stream construction, wetland construction activities, biological sampling, wetland delineation and stream assessments.

Part IV: Mitigation Work Plan

Please see the attached "A.T.F. Mitigation Maps." These three maps show the location of all restored streams with riparian buffer zones as well as the location of undisturbed streams. Restored wetland areas are shown on the "A.T.F. Mitigation Map – Freelandville Complex."

Streams restored as part of surface coal mining reclamation activities will typically be constructed in regraded mine spoil and replaced soils layers. These post disturbance layers are not natural bed materials and typically have significantly lower resistance to erosion.

Typical plan/profile/cross-section sheets have been developed for proposed restored stream floodplains with stream channels. The restored streams are proposed to be SIMILAR to Rosgen Type B, C or E Stream Channels.

Freelandville Complex – Stream Mitigation Summary

Ephemeral Streams
Impacted Ephemeral Stream Length 42,183 ft.
Restored Ephemeral Stream Length Required 28,456 ft.

Intermittent Streams
Impacted Intermittent Stream Length 11,324 ft.
Restored Intermittent Stream Length Required 14,602 ft.

Mitigation Ratios

Mitigation Within Lower White River Watershed

	Channelized Farm or Road Side Stream	Natural Channel Stream
Ephemeral	0.5:1	1:1
Intermittent	1:1	1.5:1

Mitigation Outside of Lower White River Watershed

	Channelized Farm or Road Side Stream	Natural Channel Stream
Ephemeral	0.75:1	1.25:1
Intermittent	1.25:1	1.75:1

Part IV: Mitigation Work Plan

Planting Plan

All mine disturbed areas, including restored streams and floodplain areas will initially be seeded to a mixed herbaceous seed mix to provide ground cover and protection from erosion. The typical stream construction sequence will be:

- Final grading and seedbed preparation.
- Seed temporary cover crop for spring erosion control as needed.
- Fall seeding of temporary cover crop and permanent grass species.
- Tree & shrub seedling planting
  Spring planting of bare root seedlings, with strip spraying.
  or, Fall planting of container seedlings, with strip or spot spraying.
- Mow grass and invasive species control to establish trees & shrubs.
- Planting of sedges, rushes and/or forbes for herbaceous diversity,
  by planting of "plugs" and/or over seeding of selected areas.

Temporary Cover Crop (USACE Approved)

Common Name	Rate/acre	Species Scientific Name	USF&W Wetland Indicator
Annual Ryegrass	5 -10 lbs.	Lolium multiflorum	Not Listed
Common Oat	20-30 lbs.	Avena sativa	Not Listed
Common Wheat	20-30 lbs.		

A minimum of 40 lbs/acre of a mixture of: annual ryegrass & common oat, or annual ryegrass & common wheat will be used as a temporary cover crop for erosion control in wetland construction and stream construction areas. Cover crop seeding rates should not exceed 50 lbs/acre to avoid "crowding out" permanent species. Cover crop species to be used for both "Upland" and "Wetland" Seed Mixes. Mulch will be applied as needed in wetland and stream construction areas.

Part IV: Mitigation Work Plan

Non-Wetland Upland Area Ground Cover ("Upland Seed Mix")

Common Name	Rate/acre	Species Scientific Name	USF&W Wetland Indicator
Timothy	5 lbs.	Phleum praetense	FACU
Red Clover	10 lbs.	Trifolium pratense	FACU+
Orchard Grass	10 lbs.	Dactyllis glomerata	FACU
Perennial Ryegrass	25 lbs.	Lolium perenne	FACU
Alsike Clover	8 lbs.	Trifolium hydridum	FAC-
Alfalfa	20 lbs.	Medicago sativa	No Indication

A minimum of 40 lbs/acre of a mixture of the above grass species will be applied during revegetation operations. A minimum of 10 lbs/acre of legumes will be used in the seed mixture. No fescue, of any type, sweet clover or hairy vetch will be seeded on areas to be returned to forest, or wildlife land uses.

Forest Wetland Areas Ground Cover ("Wetland Seed Mix")

Common Name	Rate/acre	Species Scientific Name	USF&W Wetland Indicator
Red Top	20-50 OZ.	Agrostis alba	FACW
Blue Joint Grass	10-30 OZ.	Calamagrostis canadensis	OBL
Fowl Manna Grass	5-10 OZ.	Glyceria striata	OBL
Deer Tongue Grass	24-48 OZ.	Dichanthelium clandestinum (also known as - Panicum clandestinum)	FACW
Rice Cut Grass	3-10 OZ.	Leersia oryzoides	OBL
Switch Grass	5-10 OZ.	Panicum virgatum	FAC+
Canadian Wild Rye	32-48 OZ.	Elymus canadensis	FAC
Riverbank Wild Rye	32-48 OZ.	Elymus riparus	FACW
Virginia Wild Rye	48-60 OZ.	Elymus virginicus	FACW-
Woolgrass	2 - 4 OZ.	Scirpus cyperinus	OBL
Prairie Cordgrass	5-10 OZ.	Spartina pectinata	FACW+

A minimum of 160-320 OZ./acre (10-20 lbs/acre) of a mixture of the above permanent grass ground cover species (minimum of four species) will be applied with the temporary cover crop species during revegetation operations. No fescue, of any type, sweet clover or hairy vetch will be seeded on areas to be returned to any type wetland area(s). Optimum seeding time for permanent grass species is between October 1 and May 15.

Part IV: Mitigation Work Plan

Bare root Tree/Shrub Planting

Bare root seedlings are typically planted in late winter and early spring, January 1 to May 15. Bare root seedlings are typically set using a tractor drawn tree planter. The tree planter opens a furrow and a bare root seedling is placed (at the proper depth) in the furrow which is then closed with presser wheels. Commercial tree planters will use a suitable herbicide when needed to thin or eliminate ground cover vegetation in a strip on both sides of the seedling row. Replacement tree planting will be by machine or by hand planting as needed.

Bare root tree seedlings for planting in restored stream riparian zones as part of the A.T.F. Mitigation Plan will be a minimum of thirty (30) inches tall. Tree planters will be instructed to mix the species to be planted and avoid planting long rows of a single species.

Rows of tree seedlings are typically spaced a minimum of eight (8) feet apart to allow access to the area for mowing and other maintenance. Bare root seedlings will be planted at a rate of 600 seedlings per acre. 8 foot row spacing requires 9.1 foot seedling spacing to yield 600 per acre.

Container Tree/Shrub Planting

Container tree and shrub seedlings are typically planted in the late fall to early spring, October to May 15. Planting holes sized for the container size are excavated and the tree seedling is placed to the proper depth in the planting hole. The hole is then backfilled and the fill is compacted. Container trees planted on a 27 foot by 27 foot spacing will yield a 60 tree per acre initial planting. Tree planters will be instructed to mix the species to be planted and avoid single species in concentrated areas.

Forrest Keeling Nursery [www.fknursery.com) has developed a four step planting sequence called "Walk-A-Way-Planting System" which utilizes fall/early winter planting. This system requires:

- Ground preparation, plowing, discing and creation of berms (June to July)
- Cover crop establishment (August to September)
- Container grown tree installation (October to December)
- Mat placement (weed barrier & moisture retainer) and fertilization (April to May)

Tree and/or shrub seedlings (both bare root and container types) will not be planted in the late spring, summer and early fall seasons (typically after May 15 and before October 1).

Part IV: Mitigation Work Plan

Permanent Tree Species List

USACE Approved	Tree Species Common Name	Tree Species Scientific Name	USF&W Wetland Indicator
W & R	Bald Cypress	Taxodium distichum	OBL
URZ	Black Cherry	Prunus serotina	FACU
W & R	Black Gum	Nyssa sylvatica	FAC
URZ	Black Walnut	Juglans nigra	FACU
Not Approved	Green Ash	Fraxinus pennsylvanica	FACW
W & R	Hazelnut	Corylus americana	FAC-
URZ	Hickory, Pignut	Carya glabra	FACU Hard Mast
URZ	Hickory, Shagbark	Carya ovata	FACU Hard Mast
W & R	Hickory, Shellbark	Carya laciniosa	FACW Hard Mast
W & R	Hickory, Water	Carya aquatica	OBL Hard Mast
W & R	Pecan	Carya illinoensis	FACW Hard Mast
W & R	Persimmon	Diospyros virginiana	FAC
URZ	Oak, Black	Quercus velutina	UPL Hard Mast
W & R	Oak, Burr	Quercus macrocarpa	FAC- Hard Mast
W & R	Oak, Cherrybark	Quercus pagoda	FACW-Hard Mast
URZ	Oak, Chestnut	Quercus prinus	FACU- Hard Mast
URZ	Oak, Chinkapin	Quercus muehlenbergii	FACU Hard Mast
W & R	Oak, Overcup	Quercus lyrata	OBL Hard Mast
W & R	Oak, Nuttall	Quercus texana	OBL Hard Mast
W & R	Oak, Pin	Quercus palustris	FAC Hard Mast
URZ	Oak, Red	Quercus rubra	FACU Hard Mast
URZ	Oak, Scarlet	Quercus coccinea	NI Hard Mast
W & R	Oak, Shingle	Quercus imbricaria	FAC- Hard Mast
W & R	Oak, Shumard	Quercus shumardi	FACW-Hard Mast
W & R	Oak, Swamp White	Quercus bicolor	FACW+ Hard Mast
W & R	Oak, Swamp Chestnut	Quercus michauxii	FACW Hard Mast
URZ	Oak, White	Quercus alba	FACU Hard Mast
W & R	Oak, Water	Quercus, nigra	FACW Hard Mast
W & R	Oak, Willow	Quercus, phellos	FACW Hard Mast
Not Approved	Red Maple	Acer rubrium	FACW
Not Approved	River Birch	Betula nigra	FACW
Not Approved	Sugar Maple	Acer saccharum	FACW
Not Approved	Sweetgum	Liquidimbar styraciflua	FACW
Not Approved	Sycamore	Plantanus occidentalis	FACW
URZ	Tuliptree	Liriodendron tulipifera	FACU+
Not Approved	White Ash	Fraxinus americana	FACU

W - Approved for USACE Wetland Construction
R - Approved for planting USACE Riparian Zones
URZ - These additional species are approved for USACE approved Upland Riparian Zone Areas

"Not Approved" indicates these tree species and/or shrub species are not to be included in the mixture of woody species to be planted as part of USACE Section 404 mitigation plan(s).

Part IV: Mitigation Work Plan

Permanent Shrub Species

USACE Approved	Shrub Species Common Name	Shrub Species Scientific Name	USF&W Wetland Indicator
Not Approved	American Plum	Prunus americana	UPL
W & R	Black Chokecherry	Aronia melanocarpa	FACW-
W & R	Buttonbush	Celphalanthus occidentalis	OBL
Not Approved	Callery Pear	Pyrus calleryana	Not Listed
W	Common Chokecherry	Prunus virginiana	FAC-
W &R	Elderberry	Sambucus canadensis	FACW-
W	Flowering Dogwood	Cornus florida	FACU
Not Approved	Gray Dogwood	Cornus racemosa	NI
W	American Cranberrybush	Viburnum trilobum	FACW
W	Ninebark	Physocarpus opulifolius	FACW-
W	Northern Bayberry	Myrica pennsylvanica	
W		Myrica gale	OBL
W & R	Pawpaw, Common	Asimina triloba	FAC
Not Approved	Red Bud	Ceris canadensis	FACU
W	Red Osier Dogwood	Cornus stolonifera	FACW
W	Silky Dogwood	Cornus amomum	FACW
W	Speckled Alder	Alnus rugosa	OBL
W	Spicebush, Northern	Lindera bensoin	FACW-
W	Spicebush, Southern	Lindera melissifolia	OBL
W	Washington Hawthorn	Crataegus phaenopyrum	FAC

W - Approved for USACE Section 404 Wetland Construction
R - Approved for planting in USACE Section 404 mitigation Riparian Zones

"Not Approved" indicates these tree species and/or shrub species are not to be included in the mixture of woody species to be planted as part of USACE Section 404 mitigation plan(s).

Part IV: Mitigation Work Plan

Permanent Sedges & Rushes (Ground Cover Diversiity)

Common Name	Species Scientific Name	USF&W Wetland Indicator	USACE Forest	Approved Emergent
Bristly (Bearded) Sedge	Carex comosa	OBL	NO	YES
Bottlebrush Sedge	Carex lurida	OBL	YES	YES
Brown Fox Sedge	Carex vulpinoidea	OBL	YES	YES
Fringed Sedge	Carex crinita	FACW+	YES	NO
Common Cattail Sedge	Carex typhina	OBL	YES	NO
Common Hop Sedge	Carex lupulina	OBL	YES	NO
Common Lake Sedge	Carex lacustris	OBL	NO	YES
Narrow-Leaved Cattail Sedge	Carex squarrosa	OBL	YES	YES
Rough-Clustered Sedge	Carex sparganioides	FAC	YES	YES
Blunt Broomsedge	Carex scoparia	FACW	YES	NO
Nodding Sedge	Carex gynandra	NI	NO	YES
Blunt Spike Rush	Eleocharis ovata	OBL	NO	YES
Chairmaker's Rush	Scirpus pungens	NI	NO	YES
Common Rush	Juncus effusus	OBL	NO	YES
Creeping Spike Rush	Eleocharis palustris	OBL	YES	YES
Dark Green Rush	Scripus atrovirens	OBL	YES	NO
Great Bulrush	Scirpus validus	OBL	NO	YES
Hard-Stemmed Bulrush	Scirpus acutus	OBL	NO	YES

NOTE: Common species names vary, USF&W Wetland Indicator based on Species Scientific Name.

Forest - Approved for Forest Type Wetland Construction & Riparian Zones
Emergent -Approved for Emergent Type Wetland Construction

Additional wetland sedges & rush species may be approved for use in mitigation areas upon application to USACE prior to planting.

Part IV: Mitigation Work Plan

Constructed Bottomland Streams with Planned Riparian Vegetation
(Streams with riparian zone(s) and/or streams located in restored forest areas.)

Description	Bare Root Seedlings	Container Seedlings
Ground Cover	"Wetland" Seed Mix	"Wetland" Seed Mix
Planting Rate	600 per acre	60 per acre
Mine Permit Land Use	Forest	Wildlife
Species planted	Minimum 5 species	Minimum 5 species

No one species may make up more than 20% of species planted, see "Permanent Tree Species List" of this attachment for USACE approved species. USACE approved "Hard Mast" species will comprise at least 80% of the initial seeded stock in riparian areas. Tree seedlings with a wetland indicator of FACU or UPL will not be planted in stream riparian areas.

Monitoring period	5 Years (w/ long term protection) 7 Years (w/out long term protection)	5 Years (w/ long term protection) 7 Years (w/out long term protection)
Site Assessments	Biannual (Spring & Fall)	Biannual (Spring & Fall)
Required Reports	Annual	Annual

See "Criteria for Biannual Stream Assessments & Annual Report"

Species Success No one species may make up more than 25% of final surviving stock.

Survival Requirement 80% of Initial Stock 90% of Initial Stock

Tree Indicator Status Complete community greater than 70% FAC or wetter status.

Ground Cover Planted species account for 80% of ground cover at end of monitor period. No one herbaceous species may comprise more than 40% of the ground cover at the end of USACE monitor period.

Permanent photo stations will be located on maps and used to obtain photographic documentation of stream construction for USACE biannual site evaluations.

Part IV: Mitigation Work Plan

Constructed Upland Streams with Planned Riparian Vegetation
(Streams with riparian zone(s) and/or streams located in restored forest areas.)

Description	Bare Root Seedlings	Container Seedlings
Ground Cover	"Upland" Seed Mix	"Upland" Seed Mix
Planting Rate	600 per acre	60 per acre
Mine Permit Land Use	Forest	Wildlife
Species planted	Minimum 5 species	Minimum 5 species

No one species may make up more than 20% of species planted, see "Permanent Tree Species List" on page 11 for USACE approved species (approved upland riparian species are identified as "W & R" and "URZ"). USACE approved "Hard Mast" species will comprise at least 80% of the initial seeded stock in upland riparian areas.

Monitoring period	5 Years (w/ long term protection)	5 Years (w/ long term protection)
	7 Years (w/out long term protection)	7 Years (w/out long term protection)
Site Assessments	Biannual (Spring & Fall)	Biannual (Spring & Fall)
Required Reports	Annual	Annual

See "Criteria for Biannual Stream Assessments & Annual Report"

Species Success No one species may make up more than 40% of final surviving stock.

Survival Requirement	80% of Initial Stock	90% of Initial Stock

Ground Cover Planted species account for 80% of ground cover at end of monitor period. No one herbaceous species may comprise more than 40% of the ground cover at the end of USACE monitor period.

Permanent photo stations will be located on maps and used to obtain photographic documentation of stream construction for USACE biannual site evaluations.

Part IV: Mitigation Work Plan

Forest Type (PF01A) Constructed Wetlands

Description	Bare Root Seedlings	Container Seedlings
Ground Cover	"Wetland" Seed Mix	"Wetland" Seed Mix
Planting Rate	600 per acre	60 per acre
Mine Permit Land Use	Forest	Wildlife
Species planted	Minimum 5 species	Minimum 5 species

No one species may make up more than 20% of species planted, see "Permanent Tree Species List" of this attachment for USACE approved species. USACE approved "Hard Mast" species will comprise at least 80% of the initial seeded stock in riparian areas. Tree seedlings with a wetland indicator of FACU or UPL will not be planted in stream riparian areas.

Monitoring period	7 Years	7 Years
Site Assessments	Biannual (Spring & Fall)	Biannual (Spring & Fall)
Required Reports	Annual	Annual

See "Criteria for Biannual Stream Assessments & Annual Report"

Species Success No one species may make up more than 25% of final surviving stock.

Survival Requirement	80% of Initial Stock	90% of Initial Stock

Tree Indicator Status Complete community greater than 70% FAC or wetter status.

Ground Cover Planted species account for 80% of ground cover at end of monitor period. No one herbaceous species may comprise more than 40% of the ground cover at the end of USACE monitor period.

Permanent photo stations will be located on maps and used to obtain photographic documentation of stream construction for USACE biannual site evaluations.

Part V: Performance Standards

Success Standards for Constructed Streams

A constructed stream reach will be considered successful if the following conditions are met at the end of the USACE required monitor period:

- Mean density of live trees per acre of riparian zone will meet the listed standards for "Species Success" and "Survival Requirement" for the stream type and riparian zone width proposed in the mitigation plan.

- The herbaceous species present and ground cover in the constructed stream and riparian zone will meet the listed standards for "Ground Cover" for the stream type and riparian zone width proposed in the mitigation plan.

- Invasive species will account for no more than 10% of total aerial cover at the end of the monitoring period. Invasive species include: cattails, phragmites, purple loosestrife, multiflora rose and reed canary grass.

- The constructed stream reach contains a stable stream channel (restored channel has defined bed & banks) with minimal channel “head cutting”.

- Erosion gullies will not be considered “constructed streams”.

- The constructed stream channel epifaunal substrate is suitable for the desired stream type proposed in the mitigation plan.

- The constructed stream channel has sinuosity suitable for the desired stream type proposed in the mitigation plan.

- The constructed stream channel EPA RBP stream “score” meets, or exceeds, the “Goal RBP Score” when proposed as part of the mitigation plan.

- The constructed stream channel length meets, or exceeds, the channel length proposed in the mitigation plan.

- The constructed stream type meets the stream type proposed in the mitigation plan.

- The constructed stream has a restored level of biologic activity that meets, or exceeds, the biologic activity in the pre-disturbance stream.

- The constructed stream will have a surface connection to "Waters of the United States" and therefore be designated as jurisdictional.

Part V: Performance Standards

Success Standards for Constructed Wetlands

A constructed wetland will be considered successful if the following conditions are met at the end of the USACE required monitor period:

- Mean density of live trees per acre of constructed wetland will meet the listed standards for "Species Success" and "Survival Requirement" outlined in the "Mitigation Work Plan."

- The herbaceous species present and ground cover in the constructed wetland will meet the listed standards for "Ground Cover" outlined in the "Mitigation Work Plan."

- Invasive species will account for no more than 10% of total aerial cover at the end of the monitoring period. Invasive species include: cattails, phragmites, purple loosestrife, multiflora rose and reed canary grass.
-
- The soils located in the constructed wetland exhibit anaerobic conditions for a continuous period consisting of a minimum of fourteen (14) consecutive days in the growing season in the local area. Documentation of anaerobic soil conditions will show the constructed wetland will be inundated and/or saturated (soil water table within 12 inches of the ground surface) and will consist of daily wetland site inspection, (documentation with report), or manual monitoring of shallow (typically 1.5 - 2 feet deep from ground surface) soil ground water monitor wells with daily report of soil water levels, or shallow soil ground water wells with dedicated water level recording devices (recording water levels at least four times per day monitored) with a report of recorded water levels.

- The hydroperiod within the restored and mitigation forest type wetland area(s) is restored. At a minimum the forest type wetland site(s) will be inundated and/or saturated (soil water table within 12 inches of the ground surface) for a continuous period consisting of a minimum of fourteen (14) consecutive days of the growing season in the local area. Documentation of the hydroperiod will consist of daily wetland site inspection, (documentation with report), or manual monitoring of shallow (typically 1.5 - 2 feet deep from ground surface) soil ground water monitor wells with daily report of soil water levels, or shallow soil ground water wells with dedicated water level recording devices (recording water levels at least four times per day monitored) with a report of recorded water levels.

- The constructed wetland will have flood storage capacity and allow the accumulation of organic and inorganic materials removed from surface runoff.The constructed stream channel has sinuosity suitable for the desired stream type proposed in the mitigation plan.

- The constructed wetland will have evidence of a return to wetland type biologic activity and habitat typical for the desired wetland classification.

Part V: Performance Standards

Success Standards for Constructed Wetlands (Continued)

- The site is self sustaining after the establishment of approved permanent vegetation and should meet the Cowardin Classification for the USACE Section 404 approved constructed wetland classification.
- The constructed wetland will have a surface connection to "Waters of the United States" and therefore be designated as jurisdictional.
- The constructed wetland type will meet the criteria defined in the 1987 USACE Wetland Manual (TR Y-87-1) and/or USACE Midwest Regional Supplement (ERDC/EL TR-08-27).

Growing Season Data - ("WETS" tables from data provided by USDA-NRCS National Water and Climate Center for: WETS Station: Washington [IN9253], Daviess County, Indiana)

Growing Season Dates (Dates not available for Knox County, IN)

	24d F or Higher	28d F or Higher	32d F or Higher
Spring (5 years out of 10)	March 23	April 2	April 13
Fall (5 years out of 10)	November 12	October 30	October 20
	233 Days	211 Days	191 Days

Growing season is based on Spring and Fall calendar dates with a 50 percent probability of a minimum temperature of at least 28d F. When using shallow soil ground water monitor wells, documentation of anaerobic soil conditions and hydroperiod for Knox County, Indiana will be the measured soil water table above the ground surface and/or no more than 12 inches below the ground surface for a continuous fourteen (14) day period between April 2 and October 30.

Part V: Performance Standards

When a constructed stream segment meets the "Success Standards for Constructed Streams" or a constructed wetland meets the "Success Standards for Constructed Wetlands" the stream segment and/or wetland will be judged a success. After submittal of the documentation of success in the annual report, Triad will petition the USACE for a written determination of successful stream and/or wetland construction and termination of Section 404 permittee site monitoring for the successful stream segment or wetland.

IF, at the end of the USACE required monitoring period, a constructed stream segment or constructed wetland does NOT meet the success standards, Triad will submit a written plan of action to be taken to enhance the restored stream and/or wetland. Alternative plans for other mitigation options may also be submitted to the USACE regulatory office for review. Monitoring of mitigation sites will continue until the USACE approves the mitigation and allows monitoring to be discontinued.

Part VI: Site Protection and Maintenance

Site Protection

Triad controls and exercises its coal mining rights for the Freelandville Complex through leases with several landowners (typically local farmers). Most of these leases were entered into prior to June 9, 2008, the effective date of the new compensatory mitigation guidelines. None of these leases give Triad the right to grant or impose a conservation easement that will restrict the landowner's ability to farm the property after Triad's operations concluded. The imposition of conservation easements under the new compensatory mitigation guidelines to Triad's Frellandville Complex would result in a substantial hardship to Triad. Triad has requested a written determination of "substantial hardship" from USACE District Engineer. Triad understands that the "significant hardship" exemption will not be granted for the A.T.F permit.

Triad owned property has been clearly marked on the A.T.F. Mitigation Maps. All restored streams and buffer zones restored on Triad owned property will be protected by a deed restriction/ conservation easement. A copy of the USACE approved "Declaration of Restrictive Covenants" has been attached. A copy of the recorded permanent deed restriction\ or conservation easement for mitigation streams will be provided to the USACE. Permanent legal protection for constructed wetlands and/or streams will be recorded in the appropriate County Courthouse no later than 60 days after the USACE determines the stream construction is successful and site monitoring is no longer required.

Streams and buffer zones not located on Triad owned property may not be protected by a deed restriction/ conservation easement. Buffer zones will be planted in these areas with landowner permission. Triad will receive mitigation credit (25% of restored stream length) for streams with a forested buffer zone but without a deed restriction.

Part VI: Site Protection and Maintenance

Maintenance Plan

Restored streams and restored wetlands will be seeded to a temporary ground cover species and permanent vegetation seed mix (as previously described) to provide protection from erosion. Permanent ground cover vegetation will be mowed, or otherwise controlled, to allow planted woody and other herbaceous species to become established.

Soil samples will be obtained annually at representative locations within the mitigation areas(s) and sent to a testing laboratory for analysis. Based on the soil test results various soil amendments will be applied at the recommended rates.

Exotic species are not prevalent at the Freelandville Complex; these species will not be brought to the site by the mine operator or the Division of Reclamation. At least once during the growing season all restored and/or mitigation areas will be inspected for invasive species.

If exotic or undesirable species arrive at the site, control of undesirable vegetation will consist of mowing and/or soil tillage to remove the infestation. Herbicides will be used (as a last resort) to remove persistent exotic and/or undesirable species including: cattails, phragmites, purple loosestrife, multiflora rose and reed canary grass.

In the event of extreme invasive species infestation, or other adverse factors, impacting mine responsible mitigation site(s) that leads to the site(s) not meeting performance standards, the Section 404 party responsible for site mitigation will obtain any required approval(s) from the State and/or Federal Fish and Wildlife agencies or other applicable agencies for permission to:

- Hire professional hunters to reduce/eliminate excessive deer populations.
- Hire professional hunters to reduce/eliminate excessive bird populations.
- Hire professional trappers to remove/reduce beaver and/or muskrats.
- Hire professional exterminators to poison rodents to reduce vermin that gnaw on tree seedlings.
- Hire professional foresters to spray herbicides to eliminate undesirable herbaceous species.
- Have professionals selectively burn areas of undesirable species.

All of the listed activities will be undertaken to comply with Clean Water Act regulations as implemented by the Environmental Protection Agency and the United States Army Corps of Engineers. Triad Mining, Inc. will be responsible for the mitigation site(s) and will obtain all required Federal, State, and/or local permits or authorizations prior to conducting activities to control nuisance wildlife and/or invasive plant species.

Part VII: Monitoring Plan

Criteria for Biannual Stream Assessments & Annual Report

Triad will complete biannual on-site assessments of constructed streams. The spring assessment will occur early in the growing season (April). The fall assessment will occur in the late in the growing season (October). The assessment methods described in EPA 841-B-99-002, Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers will be used during each bi-annual assessment. In addition to the EPA-RBP, The "Rosgen Method" of stream assessment, described in Applied River Morphology by Dave Rosgen, will also be used during the first and final year of monitoring.

Permanent "Photo Station Monitoring Locations" will be shown on the mitigation maps. One permanent photo station/assessment site will be installed per:

each 500 feet of restored intermittent stream,
each 1,500 feet of restored ephemeral stream, and
additional assessment locations should be used to document successful constructed stream segments and/or identify problems encountered.

*At least one permanent photo station/assessment site will be installed for every stream segment.

The biannual on-site restored stream assessments will investigate and document:

the growth progress and success of the permanent vegetation,
the permanent vegetation ground and species diversity,
the progress of restoration of a stable stream channel (restored channel has defined bed & banks) with minimal channel "head cutting",
the hydrology/flow regime of the restored channel,
the progress of restoration of stream epifaunal substrate,
the progress of restoration of stream biologic activity.

Beginning the year after restoration of a stream reach, the restored stream(s) will also be monitored for macroinvertrebrate species (B-IBI) and/or fish species (IBI) during the spring biannual site assessments (March15-July 15). Boiologic activity will be documented and included in the USACE Annual Mitigation Reports. Suitable B-IBI and IBI biologic study(ies) will be repeated annually during the Section 404 monitoring period. Biologic studies of constructed streams will be used to provide documentation of restoration of stream biologic activity and stream habitat values.

Macroinvertebrate species (B-IBI) and/or fish species (IBI) biologic studies will be completed by methods described in EPA 841-B-99-002, Rapid Bioassessment protocols for Use in Streams and Wadeable Rivers and/or EPA 905/R-9696/002, Development of Index of Biotic Expectations for the Ecoregions of Indiana, V, Eastern Corn Belt Plain.

Triad will supply the Corps of Engineers field office with the surface water sampling information required by SMCRA (sampled on a quarterly basis). The sampling information will be submitted as part of the annual report. If mitigation streams are still being monitored after surface water sampling is no longer required by SMCRA, the responsible party will continue sampling the same locations and submit sampling information to the Corps.

Part VII: Monitoring Plan

Criteria for Biannual Stream Assessments & Annual Report (Continued)

Triad will complete an annual report of the biannual site assessments and submit the report with supporting maps, site photos, delineation sheets and other documentation to the Corps of Engineers and to the EPA by January 30 of the year following the biannual assessments. The first annual report will be submitted following the first complete growing season for the constructed stream reach.

Criteria for Biannual Wetland Assessments & Annual Report

Triad will complete biannual on-site assessments of constructed wetland area(s). The spring assessment will occur early in the growing season (April). The fall assessment will occur late in the growing season (October).

Restored/mitigation wetland monitoring data will be obtained at a minimum of 1 assessment location for each three (3) acres of wetland type established and to be monitored. Additional assessment locations should be used to document successful constructed wetland area(s) and/or identify problems encountered.

Permanent "Photo Station Monitoring Locations" for constructed wetlands will be shown on the mitigation map(s).

Site delineation and classification of constructed wetlands will be completed by methods outlined in the USACE 1987 Wetlands Delineation Manual (TR Y-87-1), and/or USACE Midwest Regional Supplement (ERDC/EL TR-08-27) using the USACE approved wetland delineation form.

The biannual on-site wetland assessments will investigate and document:

the growth progress and success of the permanent vegetation,
the permanent vegetation ground and species diversity,
the progress of restoration of anaerobic soil conditions,
the progress of restoration of the site's hydroperiod,
evidence of restoration of wetland biologic activity.

Triad will complete an annual report of the biannual site assessments and submit the report with supporting maps, site photos, delineation sheets and other documentation to the Corps of Engineers and the EPA by January 30 of the year following the biannual assessments. The first annual USACE report will be submitted following the first complete growing season for the constructed wetland.

Part VIII: Adaptive Management Plan

As required by 33 CFR 332.6 (b), "… a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years. A longer monitoring period must be required for aquatic resources with slow development rates (e.g., forested wetlands, bogs)…." A five (5) year monitoring period has been specified for all mitigation stream segments protected by a deed restriction. A seven (7) year monitoring period has been specified for all mitigation stream segments not protected by a deed restriction and all mitigation wetlands.

If a success criterion is not met for all or any portion of the compensatory mitigation project in any year, and/or if the success criteria are not satisfied, Triad shall prepare an analysis of the cause(s) of failure and, if determined necessary by the USACE, propose remedial action for pre-approval.

As part of the adaptive management plan and the required biannual mitigation site assessments, when particular 404 mitigation site(s) [ie. restored stream reach and/or constructed wetland] meet(s) the suitable success standards PRIOR to the end of the ten year period, Triad can petition the USACE for a written determination of successful mitigation at that site(s). Upon USACE written approval, monitoring of successful mitigation site(s) will be terminated.

In the event the Corps determines the compensatory mitigation cannot be successfully completed at the intended sites, Triad will propose an alternative site. Upon approval of an alternative site, construction activities to complete the needed mitigation will begin within 180 days of alternative site approval.

As required by 33 CFR 332.4 (c) (12), the planting plan includes extensive lists of USACE approved species (trees, shrubs, sedges, rushes and forbes) to give Triad the flexibility to vary the species to be planted to match the species available for a future planting season.

The "Mitigation Work Plan" describes methods that use both bare root seedlings and/or container seedlings. Again this is an adaptive management measure to allow the Triad the flexibility to modify seedling types to match the species that may, or may not, be available for a future planting season. Coal mines are typically multi-year projects with restored streams and/or constructed wetlands being installed over several years. The availability of any particular species in a particular seedling type for purchase several years in the future cannot be guaranteed by the permittee.

Part IX: Financial Assurances

All coal mines are required to provide reclamation bond that is not released until the reclaimed area meets the approved post-mine land uses. Maintenance activities will continue until the site meets the surface coal mine performance standards. The minimum five year responsibility period from initial seeding to final bond release allows sufficient time for Triad to address any adverse challenges that may arise.

As a part of reclamation bond release, reclaimed areas are assessed by: vegetation type surveys, ground cover surveys, tree stem count, trees species survey and soil borings. All vegetation assessment data is part of the permit record and summarized in the report of bond release inspections. The bond release inspection procedure also includes a field investigation of post-mine drainage to insure that post-mine land uses can be achieved.